FIGURE 2.10 SOURCES OF ENERGY CONSUMPTION

LAUNDRY AND DRY CLEANING

General laundry operation

- Check that laundry **operating hours** are adapted to the actual needs of operation. Extended operation results in additional energy consumption. If restricted laundry operation is still required alter normal working hours, check if a separate small steam generator can be installed, instead of keeping large steam generators going for the laundry alone.
- Modify laundry operating hours according to the **actual load**. This will be almost directly proportional to occupancy. When occupancy is sufficiently low, check if the laundry operating hours could be reduced or if the laundry could be closed for one or two days.
- Keep a **sufficient stock** of linen so that you are covered for two days' closure over the weekend.
- Operate all equipment **fully loaded** at rated capacity. Utility consumption at partial loads is practically the same.
- Work out a **smooth schedule** of housekeeping to ensure timely flow of used linen being returned in the morning hours, instead of infrequently starting and stopping equipment.
- **Close steam supply** to the laundry at lunchtime and after normal working hours. If work continues during lunch hours, operate the maximum possible pieces of equipment. Always close the steam supply to equipment not in use.
- Immediately **repair** leaks of water, steam and compressed air.
- Once you have evaluated the total operating costs of your laundry, check whether switching to full or partial **outside laundry** services is more economical.

Laundry engineering

- Operate supply and exhaust fans in accordance with **actual operating times**.
- Stop the **compressor** for the laundry when it is not required.
- Maintain **hot water temperature** at 60°C (140°F).
- If separate hot water tanks for the laundry exist, install a **timer** to shut off the primary energy supply to the heat exchanger during off-duty hours. Start-up should be early enough to ensure that the required temperature has been reached by the time staff commence work.
- **Disconnect** the hot water circulating pump if the laundry is located near heat exchangers.
- **Redirect** water that would otherwise be lost to drain from the dry-cleaning machine. It can be used for cooling tower make-up or in the hotel gardens, but not for your domestic water supply.
- Frequently check **steam traps** to ensure they are functioning properly. Do not allow flash steam or live steam from leaking traps to get lost to the atmosphere. Install a flash steam vessel and heat exchanger to recover energy and water.
- Check for steam and condensate losses and **repair leaks** immediately. All condensate must be returned to the condensate tank.
- Ensure that good quality **dry steam** is supplied to the laundry to prevent condensate in equipment at start-up. Poor quality steam often results in steam being bypassed around traps or discharged to drain by laundry staff. Good quality steam is provided by adequate drainage of condensate to return piping within the distribution system.
- All piping should be well **insulated**.
- Watertube steam generators produce poor quality steam. Adequate **separators** must be installed at the main supply header.

Washing machines, washer extractors, tunnel washers, continuous batch washers (CBWs)

- Consider **low temperature** wash formulas. The temperature could be reduced from 85°C to 60°C by using special detergents.
- Consider using **'intermediate extraction'** between rinse operations.
- Check **temperature controls** and thermostats for proper functioning.
- Ensure that machines are **fully loaded** before running them.
- Wash **small quantities** in a small 5 kg machine and iron them by hand.
- Consider the **re-use** of water from previous rinse cycles for washing by installing temporary holding tanks. Chemicals and heating energy will also be saved.

Extractors

- Prolong the **spinning cycle** to achieve final water retention of less than 55 per cent. This will necessitate less energy for drying and the flatwork ironer.

Tumblers and dryers

- Review **tumbler operation time** to prevent over-drying. Consider the installation of a moisture sensor to stop the drying cycle automatically instead of at a pre-set time.
- Ensure proper **loading** to the equipment's rated capacity.
- Check **seals and gaskets** for proper closing and keep the tumbler doors closed after unloading to **retain heat**.
- Use **'non-reverse'** mode for bath linen, which will reduce drying time.
- Run **fewer** tumble dryers constantly instead of keeping them all going intermittently.
- Clean and maintain **lint screens/collectors** regularly and keep **steam coils** free from lint.
- Check the **time-setting** for the 'cool down' cycle.
- Check that **solenoid valves** close steam supply when tumbler is off.
- Consider installation of a **heat recovery** system.
- Consider the use of direct **gas-fired** equipment when replacing obsolete equipment.
- Have gas burners and burner blowers frequently **inspected** to ensure they are operating as efficiently as possible.

Flatwork ironer

- Check that linen has retained the correct **moisture** before feeding into the ironer.
- Operate ironer only at speeds that will enable feeders to feed linen **end-to-end** and ensure that linen dries **in one pass**.
- When feeding a small piece of work, always use **maximum number of lanes**.
- Keep ironer chests free from dirt and deposits, to guarantee maximum **heat transfer**.
- **Wax** ironer once or twice daily to minimise friction.
- Stop the machine during **staff breaks** and shut off the steam supply.
- Adjust dampers on **vacuum** fans for correct vacuum on rolls – excessive suction cools down the roll temperature.
- Check that **roll to chest pressure** is in accordance with the manufacturer's recommendation to guarantee optimum performance in drying.
- **Insulate** ironer chests to prevent unnecessary heat losses.
- Insulate the **steam piping** underneath the ironer.
- Install a **heat shield** (apron) at the front and to the rear side of the ironer.
- Install a **canopy** (hood) above the rolls, to retain the heat and properly vent to atmosphere. This prevents the build-up of heat in the laundry and retains heat inside the irons.
- Consider **heat reclamation** from vented evaporated water (steam) from linen for pre-heating the tumble dryer air supply.

Dry cleaning

- Load machine to its **rated capacity**.
- Turn all equipment off when **not in use**.
- **Re-use** cooling water. Ensure that the water flow stops automatically when machine stops.
- **Check** all seals and gaskets to ensure that no leaks occur.
- **Clean** the still tank regularly.
- **Do not exceed** the manufacturer's recommended steam pressure.
- Keep heating and cooling coils **free from lint and dirt**.

Presses

- **Do not overpad** (by putting a new pad over the old one), as this reduces heat transfer.
- **Shut off** steam supply to equipment that is not in use.